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(54) **Improvement in attenuated total reflection spectroscopy.**

(57) Method of ATR spectroscopy and substrate probe for use therein. The probe comprises a single optical fibre sensor, a bundle of such sensors, the sensing zone of each sensor being a small diameter

cylindrical portion merging at least on the side of the light intake end into a frustoconical portion whose large diameter base is turned away from said small diameter cylindrical portion.

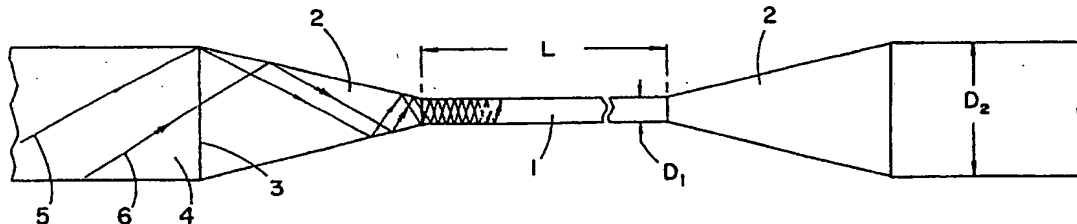


Fig. 1

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## EUROPEAN SEARCH REPORT

Application Number

EP 90 11 7402

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	OPTICS LETTERS, vol. 12, no. 6, June 1987, pages 437-439; H. TAI et al.: "Fiber-optic evanescent-wave methane-gas sensor using optical absorption for the 3.392-mum line of a He-Ne laser" * Page 437, column 1, lines 1-17; page 438, lines 9-22; figure 3; page 439, lines 15-38; table 1; figure 4 * - - -	1-4,10, 12-14,17, 21	G 01 N 21/35 G 01 N 21/55
A	ANAL. CHEM., vol. 60, 1988, pages 1908-1910; S. SIM-HONY et al.: "Fourier transform infrared spectra of organic compounds in solution and as thin layers obtained by using an attenuated total internal reflectance fiber-optic cell" * Figures 1-3; page 1908, lines 4-25; conclusions * - - -	1,12	
X	GB-A-2 180 367 (ORD INC.) * Abstract; page 4, lines 14-41; page 6, lines 59-74 * - - -	1-2,4, 12-13,17	
A	EP-A-0 206 433 (THE DOW CHEMICAL CO.) * Page 2, lines 5-21; figures 4,7; page 8, lines 8-25; page 10, line 23 - page 11, line 7; page 14, lines 2-7 * - - -	6-8,10, 19-20	
P,X	DE-U-9 001 289 (SIEMENS AG) * Figure 1; page 3, lines 6-35; page 4, line 27 - page 5, line 5 * - - -	1-4,12-14	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	ELECTRONICS LETTERS, vol. 15, no. 14, 5th July 1979, pages 432-433; E.G. RAWSON et al.: "Bitaper star couplers with up to 100 fibre channels" * Figures 2a,b * - - -	6	G 01 N G 02 B G 01 J
A	PATENT ABSTRACTS OF JAPAN, vol. 7, no. 220 (P-226)[1365], 30th September 1983; & JP-A-58 113 736 (MASAAKI MOTOI) 06-07-1983 - - - -/-	9	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 24 September 91	Examiner HOCQUET A.P.E.
<div>CATEGORY OF CITED DOCUMENTS</div> <div>X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention</div> <div>E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons ----- &amp;: member of the same patent family, corresponding document</div>			



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Application Number

EP 90 11 7402

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-4 690 492 (R.W. BEARD) * Figures 2,3; column 4, line 51 - column 5, line 5 * -----	6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 24 September 91	Examiner HOCQUET A.P.E.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X: particularly relevant if taken alone  Y: particularly relevant if combined with another document of the same category  A: technological background  O: non-written disclosure  P: intermediate document  T: theory or principle underlying the invention</p> <p>E: earlier patent document, but published on, or after the filing date  D: document cited in the application  L: document cited for other reasons</p> <p>&amp;: member of the same patent family, corresponding document</p>			